

### **REMARKS**

Claims 1-4, 6-14, 16-21, 23-31, and 33-37 are currently pending in the subject application, and are presently under consideration. Claims 1-4, 6-14, 16-21, 23-31, and 33-37 are rejected. Claims 13 and 20 have been amended. Favorable reconsideration of the application is requested in view of the amendments and comments herein.

#### **I. Rejection of Claims 1-13 and 34 Under 35 U.S.C. §103(a)**

Claims 1-13 and 34 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,272,336 to Appel, et al. ("Appel"), in view of U.S. Patent No. 6,463,295 to Yun ("Yun"), in further view of U.S. Patent No. 6,054,894 to Wright, et al. ("Wright") and further in view of U.S. Publication No. 2004/0095907 to Agee, et al. ("Agee"). Withdrawal of this rejection is respectfully requested for at least the following reasons.

In rejecting claim 1, the Office Action admits that Appel, Yun and Wright fail to teach or suggest an equalization system, as recited in claim 1 (See Office Action, Page 5). However, the Office Action contends that numerous sections of Agee disclose an equalization system, as recited in claim 1 (See Office Action, Page 5). Applicant's representative respectfully disagrees. The equalization system recited in claim 1 adjusts tones in a signal spectrum employed to provide a transmitter output signal so that the signal spectrum has a desired spectral shape. The equalization system adjusts the tones in the signal spectrum during calibration based on an indication of power. Moreover, in claim 1, the recited system employs the same indication of power to (1) compensate for at least one transmitter impairment affecting a transmitter output signal and (2) adjust tones in a signal spectrum during calibration.

Agee is related to exploiting substantive reciprocity of internode channel responses through adaptive modification of receive and transmit weights (See e.g., Agee, Abstract). In Agee, a MultiTone Demodulator Bank (MDB) 118 is disclosed (See e.g., Agee, Par. [0210]). In Agee, a transmission flows through the MDB 118 that splits the transmission into 1 through K frequency division multiple access (FDMA) channels, where K is the number of feeds (See Agee, Par. [0278]). In contrast to Agee, claim 1 recites that the equalization system adjusts

tones. Nothing in Agee teaches or suggests adjustment of the tones provided from the MDB 118. Thus, Applicant's representative respectfully submits that no structure or process taught or suggested in Appel, Yun, Wright or Agee taken individually or in combination teaches or suggests the equalization system recited in claim 1, since the equalization system recited in claim 1 adjusts tones, while the cited art fails to teach or suggest the adjustment of tones.

Further, the equalization system recited in claim 1 adjusts tones in a signal spectrum during calibration based on an indication of power for a transmitter output signal. In contrast to claim 1, in Agee, power adjustments are performed based on a capacity objective (e.g., a set of targets to be achieved) for a particular node 2 receiving a signal from another node 1 (See Agee, FIG. 32 and Pars. [0290]-[0297]). That is, Agee fails to teach or suggest an adjustment of tones based on an indication of power for a transmitter output signal, as recited in claim 1. Thus, Applicant's representative respectfully submits that the cited art does not make claim 1 obvious since Appel taken in view of Yun, in further view of Wright and in further view of Agee fails to teach or suggest the equalization system recited in claim 1, and the Office Action fails to provide any other evidence sufficient to support a legal conclusion of obviousness with respect to claim 1. Accordingly, claim 1, as well as claims 2-4, 6-13 and 34 depending therefrom is patentable.

Additionally, Appel taken in view of Yun, in further view of Wright and in further view of Agee does not teach or suggest a carrier correction system that adjusts direct current (DC) offset of at least one of an in-phase (I) signal component and a quadrature (Q) signal component utilized to provide a transmitter output signal based on an indication of power to mitigate spikes in a carrier level of the transmitter output signal, as recited in claim 4. In rejecting claim 4, the Office Action contends that Appel and Wright teach the elements of claim 4 (See Office Action, Page 7). Applicant's representative respectfully disagrees.

Wright discloses an adaptive control processing and compensation estimator (ACPCE) 28 (See Wright, Col. 25, Lines 7-8 and FIG. 13). The ACPCE 28 controls a digital compensation processor 21 based on errors introduced in signal paths of  $Ph_a(t)$  and  $Ph_b(t)$  (See Wright, Col. 7, Lines 22-26). In Wright, the  $Ph_a(t)$  and  $Ph_b(t)$  signals are compared to a complex baseband

signal  $y_s(t)$ , which is a complex baseband equivalent of a sampled amplified signal  $\Gamma_s(t)$ . In contrast to the teachings of Wright, the carrier correction system recited in claim 4 adjusts DC offset based on an indication of power for a transmitter output signal. Wright is devoid of any teaching or suggestion that the ACPCE 28 bases adjustments of DC offsets on an indication of power. Instead, the ACPCE 28 disclosed in Wright makes adjustments based on a direct comparison of  $Ph_a(t)$  and  $Ph_b(t)$  with  $y_s(t)$ . In fact, no process or structure taught or suggested in Wright teaches or suggests the carrier correction system recited in claim 4. Accordingly, Appel taken in view of Yun, in further view of Wright and in further view of Agee fails to teach or suggest the carrier correction system recited in claim 4, since the recited carrier correction system adjusts a DC offset based on an indication of power. Accordingly, Appel taken in view of Yun, in further view of Wright and in further view of Agee does not make claim 4 obvious since the cited art fails to teach or suggest the elements recited in claim 4, and the Office Action fails to provide any other evidence to sufficient to support a legal conclusion of obviousness.

Furthermore, Appel taken in view of Yun, in further view of Wright and in further view of Agee does not make claim 6 obvious. In rejecting claim 6, the Office Action contends that Col. 16, Lines 15-55 and Col. 18, Line 58-Col. 19, Line 50 of Yun teaches the equalization system of claim 6 (See Office Action, Page 7). Applicant's representative respectfully disagrees. The cited sections of Yun are completely silent on weighting tones in a signal spectrum based on an indication of power with the tones in the signal spectrum relative to an indication of power associated with a reference tone in the signal spectrum, as recited in claim 6. In fact, the cited sections of Yun make no mention of tones in a signal spectrum. Thus, the cited sections of Yun cannot teach or suggest a reference tone in the signal spectrum, such as recited in claim 6, and the Office Action fails to present any other evidence to support the contention that claim 6 would be obvious. Instead, the cited sections of Yun are related to adjusting the power of signals wirelessly transmitted between a base station (BS) and a subscriber unit (SU) (See Yun, Col. 16, Lines 42-44 and Col. 19, Lines 36-38). Nothing in the cited sections of Yun (or Yun in general) teaches or suggests selectively weighting tones in a signal spectrum based on an indication of power associated with the tones in the signal spectrum relative to an indication of power

associated with a reference tone in the signal spectrum, as recited in claim 6. Since the other art in the combination fails to cure the above-noted deficiencies of Yun, there is no teaching or suggestion in the combination of an equalization system selectively weighting tones in a signal spectrum in the particular manner recited in claim 6. Accordingly, Appel taken in view of Yun, in further view of Wright and in further view of Agee fails to make claim 6 obvious since the cited art fails to teach or suggest the elements recited in claim 6, and the Office Action fails to provide any other evidence sufficient to support a legal conclusion of obviousness.

Further still, claim 7 depends from claim 6 and recites specific structure, namely a comparator and a weighting function that performs the selective weighting of tones recited in claim 6, from which claim 7 depends. Applicant's representative respectfully submits that since Appel taken in view of Yun, in further view of Wright and in further view of Agee fails to make claim 6 obvious, the cited art cannot teach or suggest the comparator and the weighting function recited in claim 7, which comparator provides the indication of power discussed above with respect to claim 1. Accordingly, Appel taken in view of Yun, in further view of Wright and in further view of Agee fails to make claim 7 obvious.

Additionally, claim 13 has been amended to make explicit that which was believed to be implicit. The amendments to claim 13 are supported by at least Page 5, Lines 1-3 of the Specification. Applicant's representative respectfully submits that Appel taken in view of Yun, in further view of Wright and in further view of Agee does not teach or suggest an integrated circuit comprising the system recited in claim 1, as recited in claim 13. The Office Action, at page 10, appears to contend that claim 13 is obvious "because the claimed integrated circuit for a correction would perform the system steps." Applicant submits that this rationale fails to establish a prima facie case of unpatentability for claim 13 since it fails to provide support or any rational underpinning as to how it would be obvious to provide an integrated circuit of claim 13 in view of the combination of Appel, Yun, Wright and Agee. The contention that an integrated circuit would perform steps of a system appears to be an illogical statement that does not support the position that claim 13 is obvious. Specifically, Yun is related to ongoing power control regulation between a base station (BS) and a separate and spaced apart subscriber unit (SU) (See

e.g., Yun, Col. 35, Lines 15-18 and FIGS. 8(a)-8(b)). That is, the system in Yun requires a signal to be transmitted wirelessly between two physically separated entities (namely, a BS and an SU) in order control uplink and downlink power levels (See Yun, Col. 35, Lines 30-50). Applicant's representative respectfully submits that it would be illogical to combine the BS and the SU disclosed in Yun into one entity (e.g., an integrated circuit). Moreover, if only one of the BS or SU were utilized in the combination of Appel taken in view of Yun, in further view of Wright and in further view of Agee, there would be no teaching or suggestion to perform calibration based on the transmitter output power since, at each of the BS and the SU, Yun discloses using the power of the received signal - not the power of the transmitter output signal generated at the integrated circuit, as recited in amended claim 13. For these reasons, Appel taken in view of Yun, in further view of Wright and in further view of Agee does not make amended claim 13 obvious.

For the reasons described above, claims 1-13 and 34 are patentable. Accordingly, withdrawal of this rejection is respectfully requested.

## **II. Rejection of Claims 14-20 and 35 Under 35 U.S.C. §103(a)**

Claims 14-20 and 35 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Appel, Yun and Wright and further in view of Agee. Withdrawal of this rejection is respectfully requested for at least the following reasons.

Appel taken in view of Yun, in further view of Wright and in further view of Agee does not teach or suggest a correction system, as recited in claim 14. As discussed above with respect to claim 4, Wright (which the Office Action, at pages 12-13, contends teaches the correction system recited in claim 14) discloses an ACPCE 28 that controls a digital compensation processor 21 based on errors introduced in signal paths of  $Ph_a(t)$  and  $Ph_b(t)$  (See Wright, Col. 7, Lines 22-26). In Wright, the  $Ph_a(t)$  and  $Ph_b(t)$  signals are compared to a complex baseband signal  $ys(t)$ , which is a complex baseband equivalent of a sampled amplified signal  $\Gamma(s(t))$ . In contrast to the correction system recited in claim 14, the ACPCE 28 disclosed in Wright does not include a correction system that adjusts a level of at least one of an I and Q-signal components

based on an indication of power to compensate for an impairment associated with the communications apparatus that affects a level of the carrier signal in the transmit signal. In fact, nothing in Wright teaches or suggests that the ACPCE 28 employs an indication of power of a transmit signal at all.

Moreover, in rejecting claim 14, the Office Action admits that Appel, Yun and Wright does not explicitly teach an equalization system and orthogonal frequency division multiplexing (OFDM) tones, but the Office Action contends that Agee does teach an equalization system and OFDM tones (See Office Action, Page 13). While Applicant's representative agrees that Appel, Yun and Wright do not teach or suggest an equalization system and OFDM tones, claim 14 does not expressly or implicitly recite either an equalization system or OFDM tones. Thus, the teachings of Agee relied on in the Office Action appear to be completely irrelevant with respect to claim 14. Accordingly, Appel taken in view of Yun, in further view of Wright and in further view of Agee fails to make claim 14 obvious, since the cited art fails to teach or suggest the correction system recited in claim 14, and the Office Action offers no other evidence sufficient to support a legal conclusion of obviousness with respect to claim 14. Therefore, claim 14, as well as claims 16-20 and 35 depending therefrom are patentable.

Additionally, Appel taken in view of Yun, in further view of Wright and in further view of Agee does not teach or suggest an equalization system, as recited in claim 16. In claim 16, the equalization system adjusts tones in a signal spectrum corresponding to the transmit signal based on the indication of power so that the signal spectrum has a desired spectral shape. In contrast, Yun (which the Office Action contends teaches the elements of claim 16) fails to teach or suggest adjustment of tones. Instead, in Yun, the only tone disclosed is a Pilot tone. Yun discloses that the pilot tone can be continually transmitted at a known power level on a downlink to determine path loss in a spatial channel (See Yun, Col. 33, Lines 43-48). Nothing in Yun teaches or suggests adjustment of the pilot tone disclosed. In fact, as discussed above, Yun explicitly teaches that the pilot tone is continually transmitted at a known power level. Applicant's representative respectfully submits that it is not predictable to adjust tones based on such a known power level. Moreover, in rejecting claim 14 (from which claim 16 depends), the

Office Action admits that Yun (as well as Appel and Wright) fails to teach or suggest an equalization system (See Office Action, Page 13). Thus, it appears that the Office Action is offering inconsistent arguments with respect to claims 14 and 16. Accordingly, Appel taken in view of Yun, in further view of Wright and in further view of Agee does not make claim 16 obvious, since the cited art does not teach or suggest the equalization system recited in claim 16, and in rejecting claim 16, the Office Action has made arguments that are inconsistent with the rejection of claim 14, from which claim 16 depends.

Furthermore, claim 17 is similar to claim 6 and is not made obvious by Appel taken in view of Yun, in further view of Wright and in further view of Agee for reasons similar to claim 6. That is, for reasons discussed above with respect to claim 6, Appel taken in view of Yun, in further view of Wright and in further view of Agee does not teach or suggest an equalization system selectively weighting tones in a signal spectrum based on an indication of power associated with the tones in the signal spectrum relative to an indication of power associated with a reference tone in the signal spectrum, as recited in claim 17. Additionally, the Office Action fails to provide any other evidence to sufficient to support a legal conclusion of obviousness with respect to claim 17. Accordingly, claim 17 is patentable.

Claim 20 has been amended in a manner similar to amended claim 13 and is not made obvious for reasons similar to amended claim 13. In particular, it would not have been obvious to combine and modify the teachings of Appel, Yun, Wright and Agee in the manner suggested by the Office Action which would require that the BS and SU disclosed in Yun be merged into one entity. Accordingly, amended claim 20 is patentable.

For the reasons described above, claims 14-20 and 35 are patentable. Accordingly, withdrawal of this rejection is respectfully requested.

### **III. Rejection of Claims 21-27 and 36 Under 35 U.S.C. §103(a)**

Claims 21-27 and 36 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Appel, Yun and Wright and further in view of Agee. Withdrawal of this rejection is respectfully requested for at least the following reasons.

For reasons similar to those discussed above with respect to claim 14, Appel, taken in view of Yun, in further view of Wright and in further view of Agee does not teach or suggest means for shaping a signal spectrum in a transmit output signal by adjusting at least one of an I-signal component and a Q-signal component based on an indication of power, as recited in claim 21. In particular, in Yun (which the Office Action contends teaches means for shaping recited in claim 21) power adjustments are based on the SINR of a received signal (See e.g., Yun, FIG. 6 and Col. 5, Lines 23-25). In contrast to the teachings of Yun, in claim 21 the indication of power (which is the basis for shaping the recited signal spectrum) is determined for a transmit output signal. Therefore, Appel taken in view of Yun, in further view of Wright and in further view of Agee does not teach or suggest the means for shaping recited in claim 21.

Moreover, similarly to claim 14, the Office Action admits that none of Appel, Yun nor Wright teaches or suggests an equalization system are OFDM tones (See Office Action, page 18). However, claim 21 does not explicitly or implicitly recite an equalization system or OFDM, making the reliance on Agee in the rejection of claim 21 superfluous. Since Appel taken in view of Yun, in further view of Wright and in further view of Agee does not teach or suggest the means for shaping recited in claim 21, Applicant's representative respectfully submits that the cited art does not make claim 21 obvious, since the cited art fails to teach or suggest the elements of claim 21, and the Office Action has failed to provide any other evidence sufficient to support a legal conclusion of obviousness with respect to claim 21. Accordingly, claim 21 as well as claims 23-27 and 36 depending therefrom are patentable.

#### **IV. Rejection of Claims 28-33 and 37 Under 35 U.S.C. §103(a)**

Claims 28-33 and 37 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Appel, Yun and Wright and further in view of Agee. Withdrawal of this rejection is respectfully requested for at least the following reasons.

Appel taken in view of Yun, in further view of Wright and in further view of Agee does not teach or suggest applying weight factors based on an indication of power to at least one of an I-signal component and a Q-signal component for tones that form a signal spectrum of a



transmitter output signal for adjusting a spectral shape of the transmitter output signal, as recited in claim 28. The Office Action contends that various sections of Yun disclose this element of claim 28 (See Office Action, Pages 23-24). Applicant's representative respectfully submits that the applying of weight factors recited in claim 28 is not taught or suggested by Yun (or any of the cited art). In particular, the cited sections of Yun relate to adjusting uplink and downlink power between a BS and an SU (See e.g., Yun, Col. 35, Lines 30-50). Nothing in the cited sections of Yun (or elsewhere in Yun) teaches or suggests applying weight factors based on an indication of power of a transmitter output signal, as recited in claim 28. In contrast to claim 28, in Yun, power adjustments are based on the SINR of a received signal (See e.g., Yun, FIG. 6 and Col. 5, Lines 23-25). Moreover, for reasons similar to those discussed above with respect to claims 21 and 14, the Office Action's reliance on Agee in the rejection of claim 28 appears to be superfluous since Agee is cited for features (e.g., an equalization system and OFDM tones) not explicitly or implicitly recited in claim 28. Therefore, Appel, taken in view of Yun, in further view of Wright and in further view of Agee does not make claim 28 obvious, since the cited art fails to teach or suggest the applying of weight factors recited in claim 28, and the Office Action fails to provide any other evidence to sufficient to support a legal conclusion of obviousness with respect to claim 28. Thus, claim 28 as well as claims 29-31, 33 and 37 depending therefrom is patentable.

Additionally, Appel taken in view of Yun, in further view of Wright and in further view of Agee does not teach or suggest determining a weight factor for each tone based on an indication of power associated with each respective one of the tones relative to an indication of power associated with a reference one of the tones, as recited in claim 33. In rejecting claim 33, the Office Action contends that Yun teaches the elements of claim 33 (See Office Action, Page 28). Applicant's representative respectfully disagrees. The sections of Yun cited in the rejection of claim 33 are completely silent on determining a weight factor for each tone based on an indication of power associated with each respective one of the tones relative to an indication of power associated with a reference one of the tones, as recited in claim 33. In fact, the cited sections of Yun make no mention of tones. Consequently, the cited sections of Yun cannot teach

or suggest an indication of power associated with a reference one of the tones, such as recited in claim 33. Instead, the cited sections of Yun are related to adjusting the power of wireless signals transmitted between a BS and an SU (See Yun, Col. 27, Lines 28-31 and Col. 31, Lines 46-50). Nothing Yun (or any of the other cited art) teaches or suggests determining a weight factor for each tone based on an indication of power associated with each respective one of the tones relative to an indication of power associated with a reference one of the tones, as recited in claim 33. Accordingly, Appel taken in view of Yun, in further view of Wright and in further view of Agee does not teach or suggest determining the weight factor, as recited in claim 33. Therefore, Applicant's representative respectfully submits that the cited art does not make claim 33 obvious since the cited art fails to teach or suggest the elements recited in claim 33, and the Office Action fails to provide any other evidence sufficient to support a legal conclusion of obviousness with respect to claim 33.

For the reasons described above, claims 28-33 and 37 are patentable. Accordingly, withdrawal of this rejection is respectfully requested.

**CONCLUSION**

In view of the foregoing remarks, Applicant respectfully submits that the present application is in condition for allowance. Applicant respectfully requests reconsideration of this application and that the application be passed to issue.

Should the Examiner have any questions concerning this paper, the Examiner is invited and encouraged to contact Applicant's undersigned attorney at (216) 621-2234, Ext. 106.

No additional fees should be due for this response. In the event any fees are due in connection with the filing of this document, the Commissioner is authorized to charge those fees to Deposit Account No. 20-0668 of Texas Instruments Incorporated.

I hereby certify that this correspondence is being transmitted to the U.S. Patent and Trademark Office via electronic filing on April 30, 2008.

**CUSTOMER NO.: 23,494**

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